

SYSTEM AND METHOD OF REFRIGERATING AT LEAST ONE ENCLOSURE

ABSTRACT OF THE DISCLOSURE

5 A system and method are provided for refrigerating at least one enclosure, such as an aircraft galley cart. The system includes at least one air-to-liquid heat exchanger, an eutectic thermal battery, a liquid-to-direct heat exchanger and at least one liquid-to-direct heat pump. The air-to-liquid heat exchangers are in thermal communication with the interiors of the enclosures. The thermal battery is in fluid communication with the air-to-liquid heat exchangers via a first coolant loop. The liquid-to-direct heat exchanger and the liquid-to-direct heat pumps are in fluid communication with the eutectic thermal battery via a second coolant loop, and in thermal communication with a cold heat sink, such as an aircraft fuselage skin structure. The system can controllably operate in direct passive, indirect passive, 10 direct active and/or an indirect active modes whereby a coolant can selectively flow in the first and/or second coolant loops to thereby refrigerate the enclosures. 15

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